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ABSTRACT

This paper examines the process of drawing, including theories of perception and visualization. The intent is to apply knowledge of teaching drawing as a right brain activity to students using the computer and overcome the limitations that drawing on the computer imposes on students. The paper identifies the following domains of drawing: (1) visualization; (2) focus; (3) selection; (4) construction--visual and conceptual; (5) process--skill; and (6) reflection and evaluation. The study provides observations of students drawing on the computer to those who draw in the traditional manner, applying those six domains to the analysis. The paper offers examples of how students can experiment with computer drawing to enhance their focus and perception. (EH)

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by Geraldine Velasquez

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Drawing on the Computer: Turning a Left Brain Activity Back Into a Right Brain Activity

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ABSTRACT

Drawing is an essential element of what art students do. However, drawing on the computer is mechanical and disengages the artist from the subject. The results are functional and sterile. Beyond the ethical issue of copyright infringement when students use the scanner to bring in found images, art students should be able to do original, meaningful drawing on the computer. An emphasis on perception can turn drawing on the computer back into a right brain activity.

PAPER

Though we do not wish to bring the computer into the drawing studio, we often need the student to be able to originate drawings on the computer. Many reasons for this exist. In addition to the ethical implications of appropriating others' work, drawing is an essential element of what art students do. Students use original work in graphic designs, book illustrations, editorial illustration, fashion design and illustration, etc. It is therefore important to explore how to teach students to use draw programs in a less mechanical and more intuitive manner.

Upon observing students using draw programs (such as Adobe Illustrator and Superpaint, two programs which provide facsimiles of all the tools of drawing, such as pens, pencils, charcoal, smudge sticks, etc.,) it appears that an over-emphasis on the mechanics of drawing on the computer takes precedence over involvement with the subject. This restrictive approach is reflected in the product. Even advanced art majors produce images that relate more to Drawing 101 than to the individual styles that they have developed over time. The works on the computer are functional and sterile. Like the primitive attempts in Drawing 101, they reveal neither insight into the subject nor the individuality of the artist.

The question then becomes: How to actively engage the student in visual

perception of the object in order to gain empathy with the subject and render it in a personal style that goes beyond the confines of computer style? In other words, How do we turn drawing on the computer into a right brain activity?

This paper will examine the process of drawing, including theories of perception and visualization. The intent is to apply our knowledge of teaching drawing as a right brain activity to students using the computer. And by doing so we may overcome the limitations that drawing on the computer imposes on the student.

A first step is to define and then describe the process of drawing.

"**To Draw**: *to give visual form to the act of perceiving, analyzing and describing an object using appropriate materials and techniques. Drawing is a visual thinking process. It is also a means of communication. And for different types of artists it serves various purposes.*" (p15 Basic Visual Concepts)

Further:

For the fine artist drawing is an expressive creative impulse. For the designer it is an analytical means of developing form sensitivity and awareness of visual relationships in order to make a coherent graphic statement. Others use drawing to communicate ideas about objects and spaces, such as architects and engineers. (p15)

The act of drawing includes **perception and execution.** The latter involves process and techniques. Insight into perception has been provided by psychologists of art who have developed various theories. biologists who have added knowledge based on brain function; psychiatry which has added knowledge of the conscious and unconscious mind, as well as theorists on aesthetics and design

DOMAINS OF DRAWING

In order to describe the process of drawing, I have developed the following domains culled from the fields I have just mentioned. They areAS FOLLOWS:

1. **visualization**
2. **focus**
3. **selection**
4. **construction - visual and conceptual**
5. **process - skill**
6. **reflection and evaluation**

I will describe each each of these in further detail. However, the order as listed is not fixed. As in most processes, the activity is not always linear. For example, evaluation may take place at each step and in a feedback loop change the the next step; causing some to repeat if necessary.

1.**Visualization** consists of image, imaging and imagination. (Rutgers, 1986.) An object exists in space and has a physical context. The viewer (artist) sees the object This is *Image*. Next comes *imaging*, which places the object in her mind's eye. This consists of making mental notes, such as rotating or distorting the object in order to recognize its characteristics. *Imagination* is when the artist uses a visual dictionary to compare this object to similar or dissimilar objects. She is gathering data.

2. **Focus** is the very visual process of recognizing the principle elements that comprise the form of the object. The artist is analyzing and comparing and relating the distinguishing features of the object. It is similar to hearing a friend's voice call out to you in a crowded noisy bar. You hear and recognize the voice and have brought it into the foreground, into the field of vision, so to speak. When the student focuses on the object certain processes are involved: figure-ground distinction, size constancy, form con stancy and gestalt. These separate the object from its environment.

3. **Selection** goes beyond focus. It is the point of view that the artist brings to the subject, knowingly or unknowingly. It is based on perceiving and understanding the object from her point of view. This is the beginning of artistic decision. Here is where she adds intention, relevance and reference to the image. It integrates the mental process with the visual processes.

4. **Construction** is the formation of visual and conceptual constructs. It is also when execution begins. The artist is now consciously and actively engaged in a formal interpretation of the subject. At the same time that she mentally structures the thematic content of the image she is also structuring or organizing the subject according to rules of composition. The student makes a primary choice as to the style in which she will render it in order to create a visual representation of the subject

This is a complex activity. Cognitive skills as well as intuitive skills come into play. Mind and hand are involved. To help demonstrate the formation of the conceptual construct, think of the content of a couple of particular artist's work, such as Raphael's Annunciation or a Jenny Holzer. sign painting. By composing the elements into a particular arrangement, the artist has imbedded a message or theme into the work. The religiosity in Raphael's work is almost secondary to the formal elements of his style. But there is no doubt that the style is there to tell the story. In contrast, Jenny Holzer's signs are mental constructs first and foremost. However, her reduction of elements to the minimal use of letters and flat color reinforce the hierarchy of conceptual ideas over formal technique that is the hallmark of her work. The style of the artist reveals choices which reflect the construction component of the act of drawing.

5. **Process/skill** This isthe selection of the appropriate tools as means of interpreting the shapes, form, color, texture and value, size, etc. Whether in traditional media of drawing where the artist uses actual pens, pencils brushes,etc., or draw programs on the computer where facsimile of these tools are used, time and practice influence the level of the skill. This has always been the area where teachers concentrate, believing that without a certain level and degree of skill students could not express their ideas and intentions in their drawings.

6. **Evaluation**: consists of comparing the results of all of the above to each of the above. For example, the artist looks at the subject - a group of bottles on the table. She focuses on just two of them and then selects a medium and technique to render the bottles. First she decided to make them realistic and she chose a contour line to render them. Upon evaluating her first sketch she decides that adding values may be a better choice to make them look more realistic.

She then reselects the material to support this new choice. She switches from pen to pencils. Or on the computer from the pen tool to the charcoal stick. Now she also evaluates the effect of the formal arrangement to see if her intention (message) is conveyed through her choice of materials and composition. She also evaluates whether size and placement of the two bottles on the page conveyed the mental construct she wished to communicate. For example: was the size of the object, relative to the size and shape of the page, the best means of expressing the presence of the bottle (assuming she wished to convey a sense of presence?)

It is important to state that evaluation may take place at **each stage** of the drawing process. An obvious example of external evaluation is when the work is finished and/or at the end of class (when all the students display their work for analysis by the group.) This often leads to the misconception that evaluation is external to all the other processes. Many studies however, including S. Jacobsons's 1986 "Dialogue with a Master Potter" Rutgers, and Mischler at Harvard, reveal that evaluation occurs at every stage of the process and is both internal and external.

COMPARISON BETWEEN NON-COMPUTER AND COMPUTER

I will now compare my observations of students drawing on the computer to those who do it in the traditional manner. For this comparison I will use students in Basic Drawing and those in Computer Graphics II. I will use the six domains listed above as the basis of comparison

1. **Visualization**: Generally, those who draw on the computer never bring an actual object into their view. If they need to draw an object like a bottle, to bring into a newsletter, menu, etc., they never bring an actual object into the studio. They either use their imagination, which proves to contain a very limited storehouse of objects to call from, or they bring a photograph of the object from some print media.

2. Therefore our second stage, **Focus -perceiving the object,** is lacking totally or secondhand at best. According to Bloomer ..Visual perception is triggered by the retinal-image stimulus. In the case of size perception the mind reinterprets or corrects retinal information to conform to the constance principle. You then perceive the mind's interpretation and not the direct sensory data from which it was formed. When any perception is removed in this way for direct sense information, it becomes increasingly vulnerable to modification by other factors." (P56, 1976)

By not having the object in front of him, the stages of perception based on seeing and analyzing the actual object do not take place. Perception has occurred for the original person who took the photograph that the student is now using. But the student has learned nothing firsthand for himself about the object. Therefore, there is nothing new he can tell us about it.

3 **Selection** , which is based on knowing the object, is therefore limited to what I call the Egyptian point of view. Everything is first rendered from the most obvious viewpoint, generally in sideview facing left, and fixed at the distance of about nine feet from the viewer. Therefore the only relevance the object derives comes from the composition of the page. It

becomes dependent on just about anything else on the page, especially the negative space! The object the artist is rendering has little relevance brought to it by the artist.

4. **Construction** is the formation of a conceptual construct . It is the code or language in which an artist transmits an idea as well as the process by which the viewer receives and decodes it. (bloomer p. 127) When the student leaves out this step because he is more involved with the menu and tools of the program, the work becomes trite because visualization and selection is so limited. Now the object rendered is a sign for the thing which it represents. Therefore the bottle becomes a sign for a bottle.There is no character, no narrative, and now depth. We read it the same way we read the stop sign at the corner.

5. **Process and skill, is a thorny issue for comparison. For the purpose of this paper, the comparison of drawing with and without the computer, the point that the student uses the mouse and facsimile drawing tools may be the very thing which intervenes and distorts the drawing process. My observation is that learning to draw using drawing programs on the computer calls on different skills and experiences than learning to draw in Basic Drawing So the question for this paper is whether this is the determining factor in the difference in outcomes between the two.**

If so, can this difference be overcome after students master drawing programs on the computer?. Can stages 1-4 (visualization, focus, selection and construction) be more alike if drawing on the computer is taught differently than it is now?

Before we answer that question, I would like to address our last domain:

6. Evaluation. The evaluation that takes place during the drawing process is similar to both computer and non computer drawing. The student alters a line here, shading there. The student assess the shape of his bottle and refines it. But the final evaluation differs. For basic drawing, the student relates his progress and skill and moves on to more taxing and difficult problems. Such as complex compositions; trying to master shadows and reflections. etc. But for the computer student, evaluation usually relates to mastery of the program itself. Can the student use filters and masks?; does he know how to use patterns, blends and gradients? Evaluation in general address the "more and better" use of the program. Complexity is mistaken for progress. Adding distortion for the sake of using more of the program does not reflect complexity of a higher order of thinking about the object.Sophistication in rendering objects as a means of knowing and transcending the obvious seems to fall short on the computer.

Let us look at drawing holistically in order to think of a method to bring drawing on the computer more into line with what we wish to accomplish with- our art majors.

Drawing is a natural act. There is evidence of drawing from all cultures and from all periods: from cave art -to the walls of Pompeii, - to the walls of the subways . We observe children engaged in drawing from the earliest age as they grab hold any tool to make a mark. This marking continues with penmanship and writing in school. It continues with doodling and graffiti for those not engaged in formal learning. In art programs, formal drawing skills are taught through still life studies and figure drawing, both of which have an external objects for students to perceive while they master techniques in rendering.

In the formal process of drawing , at least at the beginning stage, perception occurs because the student is engaged with an external object. The act of drawing brings transcendence to the object through mental and compositional construct . In other words, drawing is a means for an artist to transform an object rather than describe an object.

Proposed Model

Now we need to make that transference occur with computer drawing as well. One assumes that an introduction to the tools of a drawing program are demonstrated and taught to the student. Aldus Superpaint or Adobe Illustrator can serve as examples. For the sake of this discussion the student has mastered the mouse functions of controlling a pen, a brush, a charcoal stick, circle and square tools etc.. Now a method can be developed which adapts the process which we use in drawing class. **Instead of using external objects for the student to perceive, we create an object on the computer screen which forces the student to use perception and selection in order to construct a unique image.**

I am proposing a technique based on an exercise developed by Betty Edwards in the revised edition of **Drawing on the Right Side of the Brain,(1989).** This is based on teaching handwriting on the computer. By having the student write his/her name on the computer then using that image to perceive the shapes of the writing by focusing on the formal aspects of the marks, a situation similar to perceiving still life objects will take place.Betty Edwards links handwriting to the **esthetic purposes** of drawing. The name becomes an abstract composition which evokes a response in the viewer.

The exercise I propose is to have the student scan his/her signature into a drawing/paint program such as Aldus Superpaint. "**Ones' signature is personal, expressive and even legally protected as a mark of 227) Betty Edwards links handwriting to the esthetic purposes of drawing .** The signature becomes an object for the student to use to perceive relationships, proportion, character, etc. The student then uses selects the pen or brush tool to create marks that lead to a better signature. **What do I mean by better? One that transcends the replication of the signature into a mark which includes a mental construct.** Of course the student is really using the mouse; which is not the familiar way he makes his signature. It is similar the Edward's instruction to use the nonusual hand to fool the mind when making this mark. What does this signature convey? Possibly ideas such as strength, reliability, beauty?

By shifting the object of perception onto monitor instead of placing it out on the table, and then by using the student's own signature as an object for him to perceive and focus on , we are reverting to the way we teach drawing. Hopefully, we have the beginning of a process of maturation for the student.

Setting more complex tasks, we ask the student to work with the interior negative spaces of the letters, as well as the exterior negative spaces between and around the letters to perceive figure-ground relationships. Thus space and dimension have been introduced. Background and shadows can be added with other tools, such as airbrush, smudged pixels, etc. The introduction of these tools are to realize imaging and imagination, not to show the razzle-dazzle of the program. The assignment progresses to focus and select individual letters from within the signature for emphasis or contrast. Size, shape and proportion are elements that the student learns to manipulate. Some elements can be repeated and arranged relative to each other and to the whole word to create a more complex composition. When the student evaluates what has become of the original mark, we would

expect he has gained insight into both the process of drawing and the object he has been drawing. The signature has **character, style, presence, as well as composition.**

We started with a name, **but it is no longer a name**, - something that is only identified and described. It is now an object that the eye focuses on and perceives. The student has moved through and beyond the word to by using the domains of drawing in the same way he would look at an object in drawing class. **Our expectations are the same as in drawing from life.**

In this manner we transcend the limitations that I have encountered when my students are asked to draw something original on the computer. I tell them they cannot always scan clip art. That they will have to create something totally their own. This is the first step in leading them to that goal.

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